Amendments to the Claims

Ex. Amd.

Claims 1-94 (cancelled)

95 (new): An *in vitro* method of determining the effect of a substance on characteristics that are indicative of Alzheimer's Disease or related neurodegenerative disorders in rodent brain cells, said method comprising:

(A) exposing said brain cells to a cathepsin D-increasing agent or compound under conditions that increase the concentration or amount of cathepsin D in said cells to an effective concentration,

(B) maintaining said cells for a time that is sufficient to induce, relative to the levels present in the absence of said substance, one or more characteristics indicative of said Alzheimer's Disease or said related neurodegenerative disorders in said cells as a result of said increase in said cathepsin D,

(C) adding said substance before, during and/or after said exposing or said maintaining; and

(D) determining whether the presence of said substance has an effect on the induction of said one or more characteristics,

wherein said characteristics are selected from the group consisting of:

(1) the formation of neurofibrillary tangles,

(2) the hyperphosphorylation of tau,

(3) the fragmentation of tau,

(4) the production and/or release of brain-produced cytokines TGF-beta, IL-1b, TNF, or LPS,

(5) a microglia reaction or microglial activation,

(6) indications of brain inflammatory reactions,

(7) conversion of p35 to p25,

(8) changes in the level and/or activity of cyclin dependent protein kinase 5 (cdk5), and

(9) changes in the level and/or activity of mitogen activated protein kinases (MAPK),

wherein said effect on said induction of any or all of said characteristics in D(1)-D(9) is indicative of the appearance or disappearance, respectively, of said characteristics of said Alzheimer's Disease or said related neurodegenerative disorders, wherein said related neurodegenerative disorder is one in which exposing said rodent brain cells to a cathepsin D-increasing agent or compound under conditions that increase the concentration or amount of cathepsin D in said cells to an effective concentration induces one or more of said characteristics of D(1)-D(9).

96 (new): The method of claim 95, wherein said characteristic is said formation of neurofibrillary tangles.

97 (new): The method of claim 96, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of

chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

98 (new): The method of claim 97, wherein said compound is ZPAD.

99 (new): The method of claim 96, wherein said brain cells are in the form of dissociated cells.

100 (new): The method of claim 96, wherein said brain cells are in the form of a brain slice.

101 (new): The method of claim 100, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

102 (new): The method of claim 96, wherein said brain cells are *in vivo* and said determining is *in vitro*.

103 (new): The method of any one of claims 96-102, wherein said brain cells are apolipoprotein E-deficient brain cells.

104 (new): The method of claim 103, wherein said rodent is a mouse.

105 (new): The method of claim 103, wherein said rodent is a rat.

106 (new): The method of any one of claims 96-102, wherein said brain cells are apolipoprotein E4-containing brain cells.

107 (new): The method of claim 106, wherein said rodent is a mouse.

108 (new): The method of claim 106, wherein said rodent is a rat.

109 (new): The method of claim 95, wherein said characteristic is said hyperphosphorylation of tau.

110 (new): The method of claim 109, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

111 (new): The method of claim 110, wherein said compound is ZPAD.

112 (new): The method of claim 109, wherein said brain cells are in the form of dissociated cells.

113 (new): The method of claim 109, wherein said brain cells are in the form of a brain slice.

114 (new): The method of claim 113, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

115 (new): The method of claim 109, wherein said brain cells are *in vivo* and said determining is *in vitro*.

116 (new): The method of any one of claims 109-115, wherein said brain cells are apolipoprotein E-deficient brain cells.

117 (new): The method of claim 116, wherein said rodent is a mouse.

118 (new): The method of claim 116, wherein said rodent is a rat.

119 (new): The method of any one of claims 109-115, wherein said brain cells are apolipoprotein E4-containing brain cells.

120 (new): The method of claim 119, wherein said rodent is a mouse.

121 (new): The method of claim 119, wherein said rodent is a rat.

122 (new): The method of claim 95, wherein said characteristic is said fragmentation of tau.

123 (new): The method of claim 122, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

124 (new): The method of claim 123, wherein said compound is ZPAD.

125 (new): The method of claim 122, wherein said brain cells are in the form of dissociated cells.

126 (new): The method of claim 122, wherein said brain cells are in the form of a brain slice.

127 (new): The method of claim 126, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

128 (new): The method of claim 122, wherein said brain cells are *in vivo* and said determining is *in vitro*.

129 (new): The method of any one of claims 122-128, wherein said brain cells are apolipoprotein E-deficicnt brain cells.

130 (new): The method of claim 129, wherein said rodent is a mouse.

131 (new): The method of claim 129, wherein said rodent is a rat.

132 (new): The method of any one of claims 122-128, wherein said brain cells are apolipoprotein E4-containing brain cells.

133 (new): The method of claim 132, wherein said rodent is a mouse.

134 (new): The method of claim 132, wherein said rodent is a rat.

135 (new): The method of claim 95, wherein said characteristic is said production and/or release of brain-produced cytokines TGF-beta, IL-1b, TNF or LPS.

136 (new): The method of claim 135, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

137 (new): The method of claim 136, wherein said compound is ZPAD.

138 (new): The method of claim 135, wherein said brain cells are in the form of dissociated cells.

139 (new): The method of claim 135, wherein said brain cells are in the form of a brain slice.

140 (new): The method of claim 139, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

141 (new): The method of claim 135, wherein said brain cells are *in vivo* and said determining is *in vitro*.

142 (new): The method of any one of claims 135-141, wherein said brain cells are apolipoprotein E-deficient brain cells.

143 (new): The method of claim 142, wherein said rodent is a mouse.

144 (new): The method of claim 142, wherein said rodent is a rat.

145 (new): The method of any one of claims 135-141, wherein said brain cells are apolipoprotein E4-containing brain cells.

146 (new): The method of claim 145, wherein said rodent is a mouse.

147 (new): The method of claim 145, wherein said rodent is a rat.

148 (new): The method of claim 95, wherein said characteristic is said microglia reaction or microglial activation.

149 (new): The method of claim 148, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

150 (new): The method of claim 149, wherein said compound is ZPAD.

151 (new): The method of claim 148, wherein said brain cells are in the form of dissociated cells.

152 (new): The method of claim 148, wherein said brain cells are in the form of a brain slice.

153 (new): The method of claim 152, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

154 (new): The method of claim 148, wherein said brain cells are *in vivo* and said determining is *in vitro*.

155 (new): The method of any one of claims 148-154, wherein said brain cells are apolipoprotein E-deficient brain cells.

156 (new): The method of claim 155, wherein said rodent is a mouse.

157 (new): The method of claim 155, wherein said rodent is a rat.

158 (new): The method of any one of claims 148-154, wherein said brain cells are apolipoprotein E4-containing brain cells.

159 (new): The method of claim 158, wherein said rodent is a mouse.

160 (new): The method of claim 158, wherein said rodent is a rat.

161 (new): The method of claim 95, wherein said characteristic is said indications of brain inflammatory reactions.

162 (new): The method of claim 161, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of

chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

163 (new): The method of claim 162, wherein said compound is ZPAD.

164 (new): The method of claim 161, wherein said brain cells are in the form of dissociated cells.

165 (new): The method of claim 161, wherein said brain cells are in the form of a brain slice.

166 (new): The method of claim 165, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

167 (new): The method of claim 161, wherein said brain cells are *in vivo* and said determining is *in vitro*.

168 (new): The method of any one of claims 161-167, wherein said brain cells are apolipoprotein E-deficient brain cells.

169 (new): The method of claim 168, wherein said rodent is a mouse.

170 (new): The method of claim 168, wherein said rodent is a rat.

171 (new): The method of any one of claims 161-167, wherein said brain cells are apolipoprotein E4-containing brain cells.

172 (new): The method of claim 171, wherein said rodent is a mouse.

173 (new): The method of claim 171, wherein said rodent is a rat.

174 (new): The method of claim 95, wherein said characteristic is said conversion of p35 to p25.

175 (new): The method of claim 174, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

176 (new): The method of claim 174, wherein said compound is ZPAD.

177 (new): The method of claim 174, wherein said brain cells are in the form of dissociated cells.

178 (new): The method of claim 174, wherein said brain cells are in the form of a brain slice.

179 (new): The method of claim 178, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

180 (new): The method of claim 174, wherein said brain cells are *in vivo* and said determining is *in vitro*.

181 (new): The method of any one of claims 174-180, wherein said brain cells are apolipoprotein E-deficient brain cells.

182 (new): The method of claim 181, wherein said rodent is a mouse.

183 (new): The method of claim 181, wherein said rodent is a rat.

184 (new): The method of any one of claims 174-180, wherein said brain cells are apolipoprotein E4-containing brain cells.

185 (new): The method of claim 184, wherein said rodent is a mouse.

186 (new): The method of claim 184, wherein said rodent is a rat.

187 (new): The method of claim 95, wherein said characteristic is said changes in the level and/or activity of cyclin dependent protein kinase 5 (cdk5).

188 (new): The method of claim 187, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

189 (new): The method of claim 188, wherein said compound is ZPAD.

190 (new): The method of claim 187, wherein said brain cells are in the form of dissociated cells.

191 (new): The method of claim 187, wherein said brain cells are in the form of a brain slice.

192 (new): The method of claim 191, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

193 (new): The method of claim 187, wherein said brain cells are *in vivo* and said determining is *in vitro*.

194 (new): The method of any one of claims 187-193, wherein said brain cells are apolipoprotein E-deficient brain cells.

195 (new): The method of claim 194, wherein said rodent is a mouse.

196 (new): The method of claim 194, wherein said rodent is a rat.

197 (new): The method of any one of claims 187-193, wherein said brain cells are apolipoprotein E4-containing brain cells.

198 (new): The method of claim 197, wherein said rodent is a mouse.

199 (new): The method of claim 197, wherein said rodent is a rat.

200 (new): The method of claim 95, wherein said characteristic is said changes in the level and/or activity of mitogen activated protein kinases.

201 (new): The method of claim 200, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

202 (new): The method of claim 201, wherein said compound is ZPAD.

203 (new): The method of claim 200, wherein said brain cells are in the form of dissociated cells.

204 (new): The method of claim 200, wherein said brain cells are in the form of a brain slice.

205 (new): The method of claim 204, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

206 (new): The method of claim 200, wherein said brain cells are *in vivo* and said determining is *in vitro*.

207 (new): The method of any one of claims 200-206, wherein said brain cells are apolipoprotein E-deficient brain cells.

208 (new): The method of claim 207, wherein said rodent is a mouse.

209 (new): The method of claim 207, wherein said rodent is a rat.

210 (new): The method of any one of claims 200-206, wherein said brain cells are apolipoprotein E4-containing brain cells.

211 (new): The method of claim 210, wherein said rodent is a mouse.

212 (new): The method of claim 210, wherein said rodent is a rat.

213 (new): An *in vitro* method of determining the effect of a substance on characteristics that are indicative of Alzheimer's Disease or related neurodegenerative disorders in rodent brain cells, said method comprising:

(A) exposing said brain cells to a condition that disrupts lysosomal activity in said cells, wherein said condition comprises contacting said cells with a compound that disrupts lysosomal activity,

(B) maintaining said cells for a time that is sufficient to induce, relative to the levels present in the absence of said substance, one or more characteristics indicative of said Alzheimer's Disease or said neurodegenerative disorders in said cells as a result of said disruption of said lysosomal activity,

(C) adding said substance before, during and/or after said exposing or said maintaining; and

(D) determining whether the presence of said substance has an effect on the induction of said one or more characteristics,

wherein said characteristics are selected from the group consisting of:

(1) the formation of neurofibrillary tangles,

(2) the hyperphosphorylation of tau,

(3) the fragmentation of tau,

(4) the production and/or release of brain-produced cytokines TGF-beta, IL-1b, TNF, or LPS,

(5) a microglia reaction or microglial activation,

(6) indications of brain inflammatory reactions,

(7) conversion of p35 to p25,

(8) changes in the level and/or activity of cyclin dependent protein kinase 5 (cdk5), and

(9) changes in the level and/or activity of mitogen activated protein kinases (MAPK),

wherein said effect on said induction of any or all of said characteristics in D(1)-D(9) is indicative of the appearance or disappearance, respectively, of said characteristics of said Alzheimer's Disease or said related neurodegenerative disorders, wherein said related neurodegenerative disorder is one in which exposing rodent brain cells to a condition that disrupts lysosomal activity in said cells, induces one or more of said characteristics of D(1)-D(9).

214 (new): The method of claim 213, wherein said characteristic is said formation of neurofibrillary tangles.

215 (new): The method of claim 214, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of

chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

216 (new): The method of claim 215, wherein said compound is ZPAD.

217 (new): The method of claim 214, wherein said brain cells are in the form of dissociated cells.

218 (new): The method of claim 214, wherein said brain cells are in the form of a brain slice.

219 (new): The method of claim 218, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

220 (new): The method of claim 214, wherein said brain cells are *in vivo* and said determining is *in vitro*.

221 (new): The method of any one of claims 214-220, wherein said brain cells are apolipoprotein E-deficient brain cells.

222 (new): The method of claim 221, wherein said rodent is a mouse.

223 (new): The method of claim 221, wherein said rodent is a rat.

224 (new): The method of any one of claims 214-220, wherein said brain cells are apolipoprotein E4-containing brain cells.

225 (new): The method of claim 224, wherein said rodent is a mouse.

226 (new): The method of claim 224, wherein said rodent is a rat.

227 (new): The method of claim 213, wherein said characteristic is said hyperphosphorylation of tau.

228 (new): The method of claim 227, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

229 (new): The method of claim 228, wherein said compound is ZPAD.

230 (new): The method of claim 227, wherein said brain cells are in the form of dissociated cells.

231 (new): The method of claim 227, wherein said brain cells are in the form of a brain slice.

232 (new): The method of claim 231, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

233 (new): The method of claim 227, wherein said brain cells are *in vivo* and said determining is *in vitro*.

234 (new): The method of any one of claims 227-233, wherein said brain cells are apolipoprotein E-deficient brain cells.

235 (new): The method of claim 234, wherein said rodent is a mouse.

236 (new): The method of claim 234, wherein said rodent is a rat.

237 (new): The method of any one of claims 227-233, wherein said brain cells are apolipoprotein E4-containing brain cells.

238 (new): The method of claim 237, wherein said rodent is a mouse.

239 (new): The method of claim 237, wherein said rodent is a rat.

240 (new): The method of claim 213, wherein said characteristic is said fragmentation of tau.

241 (new): The method of claim 240, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

242 (new): The method of claim 241, wherein said compound is ZPAD.

243 (new): The method of claim 240, wherein said brain cells are in the form of dissociated cells.

244 (new): The method of claim 240, wherein said brain cells are in the form of a brain slice.

245 (new): The method of claim 244, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

246 (new): The method of claim 240, wherein said brain cells are *in vivo* and said determining is *in vitro*.

247 (new): The method of any one of claims 240-246, wherein said brain cells are apolipoprotein E-deficient brain cells.

248 (new): The method of claim 247, wherein said rodent is a mouse.

249 (new): The method of claim 247, wherein said rodent is a rat.

250 (new): The method of any one of claims 240-246, wherein said brain cells are apolipoprotein E4-containing brain cells.

251 (new): The method of claim 250, wherein said rodent is a mouse.

252 (new): The method of claim 250, wherein said rodent is a rat.

253 (new): The method of claim 213, wherein said characteristic is said production and/or release of brain-produced cytokines TGF-beta, IL-1b, TNF or LPS.

254 (new): The method of claim 253, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

255 (new): The method of claim 254, wherein said compound is ZPAD.

256 (new): The method of claim 253, wherein said brain cells are in the form of dissociated cells.

257 (new): The method of claim 253, wherein said brain cells are in the form of a brain slice.

258 (new): The method of claim 257, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

259 (new): The method of claim 240, wherein said brain cells are *in vivo* and said determining is *in vitro*.

260 (new): The method of any one of claims 253-259, wherein said brain cells are apolipoprotein E-deficient brain cells.

261 (new): The method of claim 260, wherein said rodent is a mouse.

262 (new): The method of claim 260, wherein said rodent is a rat.

263 (new): The method of any one of claims 253-259, wherein said brain cells are apolipoprotein E4-containing brain cells.

264 (new): The method of claim 263, wherein said rodent is a mouse.

265 (new): The method of claim 263, wherein said rodent is a rat.

266 (new): The method of claim 213, wherein said characteristic is said microglia reaction or microglial activation.

267 (new): The method of claim 266, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

268 (new): The method of claim 267, wherein said compound is ZPAD.

269 (new): The method of claim 266, wherein said brain cells are in the form of dissociated cells.

270 (new): The method of claim 266, wherein said brain cells are in the form of a brain slice.

271 (new): The method of claim 270, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

272 (new): The method of claim 266, wherein said brain cells are *in vivo* and said determining is *in vitro*.

273 (new): The method of any one of claims 266-272, wherein said brain cells are apolipoprotein E-deficient brain cells.

274 (new): The method of claim 273, wherein said rodent is a mouse.

275 (new): The method of claim 273, wherein said rodent is a rat.

276 (new): The method of any one of claims 266-272, wherein said brain cells are apolipoprotein E4-containing brain cells.

277 (new): The method of claim 276, wherein said rodent is a mouse.

278 (new): The method of claim 276, wherein said rodent is a rat.

279 (new): The method of claim 213, wherein said characteristic is said indications of brain inflammatory reactions.

280 (new): The method of claim 279, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of

chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

281 (new): The method of claim 280, wherein said compound is ZPAD.

282 (new): The method of claim 279, wherein said brain cells are in the form of dissociated cells.

283 (new): The method of claim 279, wherein said brain cells are in the form of a brain slice.

284 (new): The method of claim 283, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

285 (new): The method of claim 279, wherein said brain cells are *in vivo* and said determining is *in vitro*.

286 (new): The method of any one of claims 279-285, wherein said brain cells are apolipoprotein E-deficient brain cells.

287 (new): The method of claim 286, wherein said rodent is a mouse.

288 (new): The method of claim 286, wherein said rodent is a rat.

289 (new): The method of any one of claims 279-285, wherein said brain cells are apolipoprotein E4-containing brain cells.

290 (new): The method of claim 289, wherein said rodent is a mouse.

291 (new): The method of claim 289, wherein said rodent is a rat.

292 (new): The method of claim 213, wherein said characteristic is said conversion of p35 to p25.

293 (new): The method of claim 292, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

294 (new): The method of claim 293, wherein said compound is ZPAD.

295 (new): The method of claim 292, wherein said brain cells are in the form of dissociated cells.

296 (new): The method of claim 294, wherein said brain cells are in the form of a brain slice.

297 (new): The method of claim 296, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

298 (new): The method of claim 292, wherein said brain cells are *in vivo* and said determining is *in vitro*.

299 (new): The method of any one of claims 292-298, wherein said brain cells are apolipoprotein E-deficient brain cells.

300 (new): The method of claim 299, wherein said rodent is a mouse.

301 (new): The method of claim 299, wherein said rodent is a rat.

302 (new): The method of any one of claims 292-298, wherein said brain cells are apolipoprotein E4-containing brain cells.

303 (new): The method of claim 302, wherein said rodent is a mouse.

304 (new): The method of claim 302, wherein said rodent is a rat.

305 (new): The method of claim 213, wherein said characteristic is said changes in the level and/or activity of cyclin dependent protein kinase 5 (cdk5).

306 (new): The method of claim 305, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

307 (new): The method of claim 306, wherein said compound is ZPAD.

308 (new): The method of claim 305, wherein said brain cells are in the form of dissociated cells.

309 (new): The method of claim 305, wherein said brain cells are in the form of a brain slice.

310 (new): The method of claim 309, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

311 (new): The method of claim 305, wherein said brain cells are *in vivo* and said determining is *in vitro*.

312 (new): The method of any one of claims 305-311, wherein said brain cells are apolipoprotein E-deficient brain cells.

313 (new): The method of claim 312, wherein said rodent is a mouse.

314 (new): The method of claim 312, wherein said rodent is a rat.

315 (new): The method of any one of claims 305-311, wherein said brain cells are apolipoprotein E4-containing brain cells.

316 (new): The method of claim 315, wherein said rodent is a mouse.

317 (new): The method of claim 315, wherein said rodent is a rat.

318 (new): The method of claim 213, wherein said characteristic is said changes in the level and/or activity of mitogen activated protein kinases.

319 (new): The method of claim 318, wherein said compound is selected from the group consisting of a compound which is selected from the group consisting of chloroquine, N-CBZ-L-phenylalanyl-L-alanine-diazomethylketone, N-CBZ-L-phenylalanyl-L-phenylalanine-diazomethylketone, and beta-amyloid.

320 (new): The method of claim 319, wherein said compound is ZPAD.

321 (new): The method of claim 318, wherein said brain cells are in the form of dissociated cells.

322 (new): The method of claim 318, wherein said brain cells are in the form of a brain slice.

323 (new): The method of claim 322, wherein said brain slice is a hippocampal slice, an entorhinal cortex slice, an entorhinohippocampal slice, a neocortex slice, a hypothalamic slice, or a cortex slice.

324 (new): The method of claim 318, wherein said brain cells are *in vivo* and said determining is *in vitro*.

325 (new): The method of any one of claims 318-324, wherein said brain cells are apolipoprotein E-deficient brain cells.

326 (new): The method of claim 325, wherein said rodent is a mouse.

327 (new): The method of claim 325, wherein said rodent is a rat.

328 (new): The method of any one of claims 318-324, wherein said brain cells are apolipoprotein E4-containing brain cells.

329 (new): The method of claim 328, wherein said rodent is a mouse.

330 (new): The method of claim 328, wherein said rodent is a rat.